Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
	)	
Reallocation of 30 MHz of 700 MHz	)	Rm No. 11348
Spectrum (747-762/777-792 MHz)	)	
from Commercial Use	)	
	)	
Assignment of 30 MHz of 700 MHz	)	
Spectrum (747-762/777-792 MHz)	)	
to the Public Safety Broadband Trust for	)	
Deployment of a Shared Public Safety/	)	
Commercial Next Generation Wireless Network	)	

To: The Commission

Comments of GEOCommand, Inc. on the
Petition For Rulemaking filed by Cyren Call Communications Corporation

Laura C. Mow
Kilpatrick Stockton LLP
Suite 900, 607 14th Street, N.W.
Washington, D.C. 20005-2018

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Attorney for GEOCommand, Inc.

TABLE OF CONTENTS

SUMMARY

Cyren Call proposes to reallocate the 30 MHz of commercial 700 MHz spectrum (747-762/777-792) to public safety, in order to create a nationwide, interoperable, broadband public safety network. Pursuant to the Cyren Call proposal, the newly allocated spectrum would be licensed to a Public Safety Broadband Trust, which would require the network to be designed to public safety specifications by utilizing common protocols and operating standards. The Trust would lease excess capacity on the network to commercial operators, who would fund and construct the network in exchange for access to the spectrum. During any emergency situations, however, public safety entities would be assured of priority access to the spectrum through a dynamic frequency assignment method.

At long last, the FCC has before it a comprehensive proposal to facilitate a nationwide public safety network that addresses many of the nagging deficiencies existing in our current public safety infrastructure. First, the proposal selects contiguous frequencies sufficient to permit more dynamic and advanced broadband services -- a feature that would enable public safety to fashion a comprehensive response to a wide variety of emergencies. In addition, the propagation characteristics of these frequencies make them particularly well-suited to public safety services, and the fact that this spectrum (scheduled to be vacated by broadcasters) will have no incumbents further validates its selection.

Second, the Cyren Call proposal decisively focuses on the significant interoperability challenges currently plaguing the public safety industry. By licensing the proposed frequencies to a single "Broadband Public Trust" that is charged with ensuring common protocols and operating standards, *the 700 MHz network incorporates as a basic design feature complete hardware interoperability.* Cyren Call's uniquely centralized approach to ensuring hardware

interoperability resolves perhaps the single most critical deficiency in the public safety industry today.

Third, and equally important, by providing for the leasing of "excess capacity" on the network to commercial operators in exchange for the funding and construction of that network, Cyren Call has devised a solution to the constant dilemma: how to obtain the funding necessary to build a sophisticated and comprehensive public safety network when the public safety industry does not have the means to provide such funding? The public/private partnership proposed by Cyren Call assures that the network will be constructed, while still preserving the priority rights of the public safety entities during emergencies. Use of the frequencies by commercial operators during non-emergencies also constitutes an efficient use of valuable and scarce spectrum.

On balance, the Cyren Call proposal should be seriously considered by the Commission. While not the exclusive solution for public safety, it reflects a mighty effort to address many of the problems plaguing the public safety industry, and moves the debate forward from the theoretical to the practical. GEOCommand commends Cyren Call for the comprehensive scope of its proposal and its sincere efforts to overcome the hurdles facing public safety.

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Comments of GEOCommand, Inc.

GEOCommand, Inc. ("GEOCommand"), by its counsel, hereby submits these comments on the "Petition for Rulemaking" filed at the Federal Communications Commission ("FCC" or "Commission") by Cyren Call Communications Corporation ("Cyren Call") on April 27, 2006. Among other things, that Petition seeks the reallocation of 30 MHz of commercial 700 MHz spectrum (currently slated for auction) for use in a nationwide public safety network.

The FCC solicited comments on Cyren Call's Petition in a Public Notice, dated October 30, 2006.[1] Although the Acting Bureau Chief of the Public Safety and Homeland Security Bureau (the "Bureau") subsequently dismissed the Petition, the Bureau specifically noted that it was "leaving the docket open," presumably to consider any comments on the Cyren Call

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[1] Public Notice, Consumer & Governmental Affairs Bureau, Reference Information Center, Petitions for Rulemaking Filed, Report No. 2794, released October 30, 2006. The comments were specified as due by November 29, 2006.

Petition submitted by the public.[2] The dismissal was based on the Bureau's conclusion that Cyren Call's Petition was inconsistent with Sections 337(a) and 309(j)(15)(C)(v) of the Communications Act of 1934, as amended ("the Act"), and that the FCC was required by such provisions to auction the spectrum for which Cyren Call was seeking reallocation and assignment. Barring legislative relief, the Bureau further concluded that the Commission had no authority to take additional action on the Petition at this time.[3] Notwithstanding this determination, the Bureau acknowledged "the unique communications needs of public safety entities and the instrumental role that spectrum in the 700 MHz band can play in meeting those communications needs," and asserted that it "remain[ed] committed to ensuring effective and efficient communications between first responders."[4] Accordingly, in order to further develop the public record on the critical issue of public safety communications, GEOCommand is pleased to comment on the merits of the Cyren Call proposal.

I.

INTRODUCTION

A. The Cyren Call Petition

The Cyren Call Petition proposes that the 30 MHz of commercial 700 MHz spectrum (747-762/777-792) ("700 MHz Spectrum) be reallocated to public safety use to create a

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2 *See*, Order, DA 06-2278, November 3, 2006.

3 Cyren Call acknowledged that the spectrum it seeks has been designated to be auctioned for commercial purposes and stated its commitment to pursuing legislative relief to permit the grant of its Petition. Petition at vi, note 4. Accordingly, these comments assume that in order for the Commission to proceed on this matter, such legislative relief will indeed be obtained.

4 Order, at ¶3.

nationwide, interoperable, broadband public safety network.[5] Under the Cyren Call proposal, all of these frequencies would be licensed to the "Public Safety Broadband Trust," a single consolidated entity representing all public safety users of the network. This Trust, in turn, would lease the excess capacity of the reallocated 700 MHz Spectrum to various commercial operators. Pursuant to these lease arrangements, the commercial operators would fund and construct the network infrastructure in exchange for commercial use of the frequencies only during those times when the frequencies are not being used by the public safety industry. The Trust would further ensure that the national network was designed to public safety specifications, and require that the network reflect as a core design element an interoperability feature that ties together legacy local, state and federal systems, as well as those operated by members of critical infrastructure industries.

With these elements, the Cyren Call Petition addresses several issues critical to the public safety industry: (i) how to facilitate a ubiquitous public safety network capable of operating throughout the country; (ii) how to obtain the financing necessary to build critical public safety networks; (iii) how to make the most efficient use of the 700 MHz Spectrum while still providing for essential public safety services; and (iv) how to address the widespread lack of interoperability currently plaguing the public safety industry.

B. The Current Public Safety Environment

Consideration of any proposal to improve public safety telecommunications services must include a review of the current regulatory and practical environment for those services. Over the past several years, certain momentous events have highlighted deficiencies in public

[5] These frequencies should be distinguished from the existing 24 MHz public safety allocation within the 700 MHz band, which is not affected by Cyren Call's Petition. Public safety already has identified requirements for the existing 24 MHz public safety allocation, which is necessary without regard to the proposed reallocation of the 30 MHz of commercial 700 MHz Spectrum identified by Cyren Call.

safety services. In particular, the performance of public safety services during emergencies, such as the September 11, 2001 airplane highjackings or Hurricane Katrina in 2005, reflected systematic problems inhibiting the efficient and effective provision of first responder services. Many of these problems are associated with a lack of interoperability among existing public safety systems -- a state brought about by piecemeal spectrum allocation for public safety services[6] and by the deployment of incompatible equipment by public safety systems.[7] As a result, these systems simply cannot communicate with each other at the very times when effective and prompt communications are most vital.[8]

Although both Congress and the Commission have acknowledged the importance of improving public safety services and have shown a willingness to allocate additional spectrum to public safety, any allocation should seek to establish a more uniform system of public safety networks, such that first responders deployed to a particular location can work together to provide services necessary to meet the emergency at hand. In order to accomplish this goal, in considering any spectrum allocation involving public safety services, the FCC should consider:

- Whether sufficient spectrum is being allocated to provide for construction of a nationwide network on frequencies particularly well-suited for public safety;

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[6] For example, current public safety allocations can be found at 25-50 MHz (VHF Low Band), 150-174 MHz (VHF High Band), 220-222 MHz (220 MHz band), 450-470 MHz (UHF band), 764-776/794-806 MHz (700 MHz band), 806-821/851-866 (800 MHz band), 821-824/866-869 (NPSPAC band) and 4940-4900 MHz (4.9 GHz band). See, *Report to Congress on the Study to Assess the Short-Term and Long-Term Needs for Allocation of Additional Portions of the Electromagnetic Spectrum for Federal, State and Local Emergency Response Providers*, WT Docket No. 05-157 at ¶ 5 (December 16, 2005)("Public Safety Needs Report").

[7] Even if first responders have equipment that operates in the same frequency bands, such systems typically have different receiver standards, modulation techniques, and/or encryption schemes.

[8] One definition of "interoperability" is set forth in Section 90.7 of the Commission's Rules, 47 C.F.R. §90.7, in which the FCC describes interoperability as "[a]n essential communications link within public safety and public service wireless communications systems which permits units from two or more different entities to interact with one another an to exchange information according to a prescribed method in order to achieve predictable results."

- Whether contingent spectrum is available to permit the deployment of broadband services in the public safety context;[9]

- Whether the spectrum allocation provides for compatible protocols and technical specifications such that public safety systems can communicate with each other in an effective manner;

- Whether the spectrum allocation incorporates a plan to ensure that a nationwide network is fully funded and maintained; and

- Whether the spectrum allocation reflects the most efficient use of the spectrum, while still serving public safety needs?

The various aspects of the Cyren Call proposal must be examined from these perspectives to determine whether it meets the overall goal of ensuring that first responders can be deployed through a nationwide network and work together when deployed to common locations.

C. GEOCommand's Interest In This Proceeding

As an initial matter, it may be helpful to describe GEOCommand's interest in this proceeding in order to determine GEOCommand's relation to the public safety industry. GEOCommand's business is focused squarely on first responders and its interest is in promoting plans to enhance the capabilities of these responders in the most efficient and effective manner. In essence, GEOCommand is an advanced mapping data and information tool. It provides first responders with advanced GIS mobile mapping solutions, making available the timely data

[9] This is not to say that narrowband services do not play a critical role in public safety services. Indeed, GEOCommand believes that narrowband systems should comprise an essential component of any comprehensive public safety strategy. Clearly, a wide variety of critical information can be conveyed via narrowband services to first responders. And while the deployment of broadband services can enhance the degree of information available to first responders and ensure greater interaction with such information during emergencies, they should not be the exclusive purveyors of public safety services. The most effective course would be to pursue a layered strategy that incorporates and coordinates multiple components, including narrowband and broadband services.

needed for critical field decisions.[10] GEOCommand's mobile geographic information system can be integrated with global positioning systems, computer aided dispatch and other mobile computing devices, with the ability to integrate with various communications technologies, including both the internet and wireless.[11] As a result, GEOCommand provides first responders with valuable information to enable them to respond to emergency situations and provide their services in a safe and efficient manner.

Many GIS systems display spatial information in the tabular format of a database, which can be difficult to interpret. GEOCommand's display, by contrast, is visual, with spatial data viewed in layers that combine to form an immediately understandable model of the real world. GEOCommand's first layer consists of visible geography: building footprints, pavement edges, bodies of water, and land formations. This information can be superimposed on an aerial photographic background. Second and third layers display the invisible geography: utilities, zoning, parcels, and special districts (fire, police, school, historic, voting, etc.). GEOCommand believes that its technology can ensure wireless connectivity capabilities at several frequencies currently in use by public safety and homeland security agencies, including the 700 MHz Spectrum at issue in this proceeding.

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[10] GEOCommand provides its equipment and software to various first responders, including in particular, fire companies, police departments, utility companies, airports, nuclear facilities, emergency medical units, bridge and tunnel authorities and at all levels of government. GEOCommand software has been used by the Los Alamos National Lab and the City of Roseville, California. The City of Worcester, Mass. Fire Department is evaluating a preliminary release of the new revision and is scheduled to be a beta-test participant in the spring.

[11] A geographic information system, or GIS, is a computer application that can capture, store, analyze, and display geographically referenced information. Most emergency-related information contains a location reference, placing the information at some point on the globe. The power of a GIS comes from its ability to link, or integrate, pieces of information that are difficult to associate in any other way. For example, a GIS can combine information from different sources – maps, pre-plans, hydrant records, land records, and aerial photography – to display a road map that includes building information, water sources, topography, and visual images of the area surrounding an emergency. A GIS can analyze this information to provide visual data that includes driving directions, fall-back zones, and hazmat warnings.

GEOCommand strongly supports the development of effective public safety services in this country. Cyren Call's proposal takes a comprehensive look at the needs of the industry and fashions innovative solutions to the technical, interoperability and financial hurdles facing our first responders. While the proposed nationwide network on the 700 MHz Spectrum does not serve as the exclusive solution to public safety problems, it appears to provide an essential component to first responder effectiveness. The bases for these conclusions are discussed below.

II.

DISCUSSION

A. A Nationwide Broadband Public Safety Network Utilizing the 700 MHz Spectrum Would Facilitate The Provision Of Significant Public Safety Services.

In its recent Report to Congress regarding the needs of federal, state and local emergency responders, the Commission emphasized that "emergency response providers would benefit from the development of an integrated, interoperable nationwide network capable of delivering broadband services throughout the country."[12] The FCC noted several critical services potentially available via such a broadband network:[13] (i) delivery of rapid warnings and messages pertaining to criminal activity, including AMBER Alerts; (ii) video surveillance during emergency incidents; (iii) real-time text messaging and e-mail; (iv) delivery of high resolution digital images; and (v) the ability to obtain location and status information of personnel and equipment in the field.[14] Until now, there has been no comprehensive, workable

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12 Public Safety Needs Report, at 3.

13 Public Safety Needs Report, at 14.

14 As earlier described, this location and status service, in particular, falls squarely within the purview of the GEOCommand software. While a more limited version of this service is available in a

plan to implement a nationwide broadband network with these services. The Cyren Call Petition sets out a thorough and practical plan which seeks to ensure that an effective nationwide network is authorized and constructed in an expeditious manner.

The 700 MHz Spectrum proposed by Cyren Call is particularly well-suited to this task. Its propagation characteristics ensures broad coverage from a single transmitter, which in turn, better serves the public safety industry by providing the best coverage at the most efficient cost. The 700 MHz Spectrum also comprises a single contiguous block, thus enabling the provision of more advanced broadband services. Moreover, upon the vacating of this spectrum by the broadcasting industry, the 700 MHz Spectrum will be unencumbered and thereby avoid the thorny issue of relocating incumbent licensees.[15]

In addition, the Cyren Call proposal addresses the means by which the public safety network will encompass the entire country. Under the Cyren Call Petition, there will be 75% terrestrial geographic coverage of the contiguous United States and 63.5% of the entire nation. Areas outside the proposed terrestrial coverage are served by satellite overlays, which also provide redundancy to the network. No other proposal or existing public safety system provides this degree of coverage.

B. Cyren Call's Solution To The Interoperability Problem Is Innovative And Effective.

Cyren Call proposes that the 700 MHz Spectrum be licensed to a single "Public Safety Broadband Trust," which will establish a wide range of common protocols in which public safety users will be assured of a common frequency plan, a common technology platform,

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narrowband context as well, a broadband network allows for a significantly more dynamic interaction of information.

[15] See 47 U.S.C. §337(a)(1); Reallocation of Television Channels 60-69, the 746-806 MHz Band, ET Docket No. 97-157, *Report and Order*, 12 FCC Rcd 22953 (1997).

compatible equipment and consistent network functionality and performance.[16] This required commonality will, for the first time, seriously address the interoperability problem that has plagued the public safety industry since its inception.

Currently, public safety licensees hold frequencies drawn from a wide variety of frequency pools, and deploy equipment that may be uniquely suited for the frequencies utilized or the service performed. These systems, however, cannot necessarily communicate with equipment deployed or frequencies utilized in other public safety contexts. In order to tackle this interoperability problem, some commonalities must be established to ensure system compatibility on a number of levels.[17] Interoperability issues arise as a result of incompatibilities in frequencies, hardware and software. Through the use of the Public Safety Broadband Trust, the Cyren Call Petition primarily addresses interoperability hurdles with respect to hardware, by ensuring certain protocols and operational standards affecting frequency bands, modems, transmitters, base stations, and the like. Cyren Call's resolution of the hardware interoperability problem therefore ensures that software -- such as GEOCommand's product -- could be utilized by first responders from different jurisdictions to work together to share crucial information and data during an emergency.

The following scenario illustrates this point. Assume, as an initial matter, that a first responder in New Orleans uses the GEOCommand software, and operates via the proposed 700 MHz broadband network proposed by Cyren Call. A first responder in Birmingham, Alabama has not purchased the GEOCommand software for its own jurisdiction, but has portable

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16 Cyren Call Petition, at 23-27.

17 Care must be taken, of course, to ensure that the Trust does not unintentionally limit technological advances by over-prescribing common protocols and standards. Only the lowest common denominator necessary to ensure interoperability should be adopted.

computers and also operates via the proposed 700 MHz broadband network (thereby having compatible communications equipment with the New Orleans first responder and essentially sharing the same communications backbone from a protocol and operational standards perspective).[18]

Assume next that an emergency occurs in New Orleans. The New Orleans first responder deploys to the field with wireless connectivity via the 700 MHz public safety system, utilizing the GEOCommand software to pull up critical data on geographic features, building blueprints, emergency supply locations, hazardous materials projections, and the like. This information is presented in a layered, spatial format, and updated in near or actual real time to account for changing conditions.

A Birmingham, Alabama rescue squad travels to New Orleans to assist in the emergency. Upon entering the New Orleans area, the Birmingham first responder downloads the "thin client" version of the GEOCommand software through the common wireless 700 MHz communications connection. Once this program is run, the Birmingham first responder can interface with the New Orleans GEOCommand server and access certain GEOCommand functionality in New Orleans. As a result, these two first responders -- operating on the 700 MHz broadband network and each from a different jurisdiction -- are able to work together to address the emergency with common geographical, terrain, building and other public safety information. They each receive ongoing updates to this information, and are able to interact

[18] This example speaks to the advantages of first responders utilizing a common network and software, such as GEOCommand's -- that can link these responders to a common database experience. It should be noted, however, that the GEOCommand software is adaptable to a broad range of frequency bands and can be deployed in a wide variety of first responder networks.

with the GEOCommand database to facilitate a coordinated action. The result is a more effective public safety response to a critical situation.[19]

C. Cyren Call's Proposed Partnership of Commercial and Public Safety Entities Encourages Financial Investment In The Public Safety Network.

Cyren Call also proposes that the 700 MHz Spectrum be developed pursuant to a public/private partnership, in which public safety organizations (through the Broadband Trust) would share an advanced, IP-based broadband network with commercial operator spectrum lessees.[20] These commercial operators would fund and construct the network, in exchange for presumptive access to whatever capacity is not being utilized by public safety. The needs of the public safety industry would be assured by imposition of dynamic frequency assignments such that the public safety entity would always have preemptive access to whatever capacity is needed to satisfy its requirements at any point in time.

As an initial matter, this approach addresses the issue of how to obtain funding to construct the nationwide public safety network -- a challenge that has been acknowledged by the FCC in its consideration of public safety needs.[21] This public/private partnership, while innovative in the public safety context, has some precedent in FCC licensing. Early examples of such a partnership can be found, for example, in the development of Instructional Television Fixed Radio ("ITFS"), now known as Educational Broadband Service ("EBS") spectrum in the

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[19] Nor would the scenario change appreciably if the first responders at issue were from the same jurisdiction. A utility first responder and a fire station first responder from New Orleans, for example, could coordinate the necessary responses for each type of responder utilizing the same database, and interacting with that database in a dynamic fashion.

[20] Cyren Call Petition, at 19-23.

[21] See Public Safety Needs Report, at 15. ("While of significant benefit to public safety, implementation of such a [nationwide interoperable broadband mobile communications] network likely would be costly.")

2.5 GHz band.[22] This spectrum, targeted for educational use, was primarily funded and constructed by commercial entities, who then leased the excess capacity of such spectrum for commercial use. The excess capacity lease agreements, pursuant to FCC rule requirements, preserved the capacity reserved for educational use, with specifications of educational programming to be provided for certain minimum hours on certain days and times.[23] More recently, the partnership resulting from the leasing of spectrum has expanded through the Secondary Market proceeding orders, permitting the commercial lessees to control more aspects of the spectrum being developed, while still recognizing the status of the FCC licensees.[24]

The same kind of partnership can work in the public safety context so long as priority access to the spectrum by public safety is preserved. Because emergency situations, by their very nature, are focused events which are not continuous over a period of time, the "excess capacity" available to the private sector would be considerable, and certainly sufficient to justify the investment in the nationwide network. If the "excess capacity" was used by commercial entities, such use would ensure that valuable spectrum was not lying fallow during non-emergencies. The only issue, then, is to devise a system by which the public safety entity could be *assured* of such priority access during emergencies -- a concern that could be addressed by

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22 See, e.g., In the Matter of Parts 1, 21, 73, 74 and 101 of the Commission's Rules to Facilitate the Provision of Fixed and Mobile Broadband Access, Educational and Other Advanced Services in the 2150-2162 and 2500-2690 MHz Bands, 19 FCC Rcd 14165, 14171-14176.

23 As technology advanced, the reserved capacity became more flexible. For example, once the spectrum at issue is deployed in a digital mode, the commercial lessee is required to reserve no less than 5% of the overall capacity to the educational licensee with no time or day restrictions. See 47 C.F.R. §§27.1203(b) & (c); 27.1214(b).

24 Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets, WT Docket No. 00-230, *Report and Order and Further Notice of Proposed Rulemaking,* 18 FCC Rcd 20604 (2003; Erratum, 18 FCC Rcd 24817 (2003); *Second Report and Order, Order on Reconsideration, and Second Further Notice of Proposed Rulemaking*, 19 FCC Rcd 17503 (2004). Under these new de facto control lease models, the spectrum lessee is encouraged to make more substantial capital investments in the system networks, as its interests are better served through greater control of the leased spectrum.

dynamic frequency assignments to assure the public safety entity that *any* time it sought to access those frequencies, it would have a priority over commercial use. The result is an elegant resolution of an ongoing dilemma: how to construct and fund a nationwide, broadband network for public safety use, using frequencies ideally suited for such use, but also coveted by the commercial sector for the deployment of commercial broadband services and used by such commercial entities during all non-emergency times. Cyren Call's solution appears to provide something for everyone, while also meeting critical public interest needs. As such, it warrants serious consideration by the FCC.

III.

CONCLUSION

For the reasons above, GEOCommand believes that the FCC should issue a Notice of Proposed Rulemaking addressing the issues raised in the Cyren Call Petition. While this proposal obviously will be further fleshed out in any rulemaking proceeding, the Petition (i) identifies ideal spectrum which will be available without incumbent licensees, sufficient to accommodate a nationwide broadband IP-based network for public safety use; (ii) incorporates a plan to ensure compatible protocols and technical specifications such that public safety systems can communicate with each other in an effective manner; (iii) provides a plan to ensure the funding and construction of the proposed nationwide network by commercial operators; and (iv) proposes that the spectrum will be utilized to its maximum capacity through the establishment of

a unique public/private partnership. Such a comprehensive and effective plan to address public safety issues deserves further public debate.

Respectfully submitted,

GEOCOMMAND, INC.

By: _____

Laura C. Mow
Kilpatrick Stockton LLP
Suite 900, 607 14th Street, N.W.
Washington, D.C. 20005-2018

November 29, 2006

Its Attorney